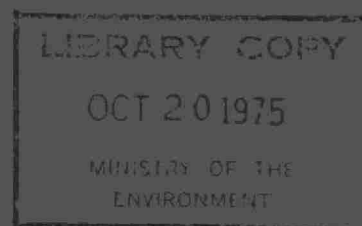


# OPERATING SUMMARY

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## TOWNSHIP OF KINGSTON WATER POLLUTION CONTROL PLANT



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KINGSTON TWP.

WATER POLLUTION CONTROL PLANT

operated for

THE TOWNSHIP OF KINGSTON

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

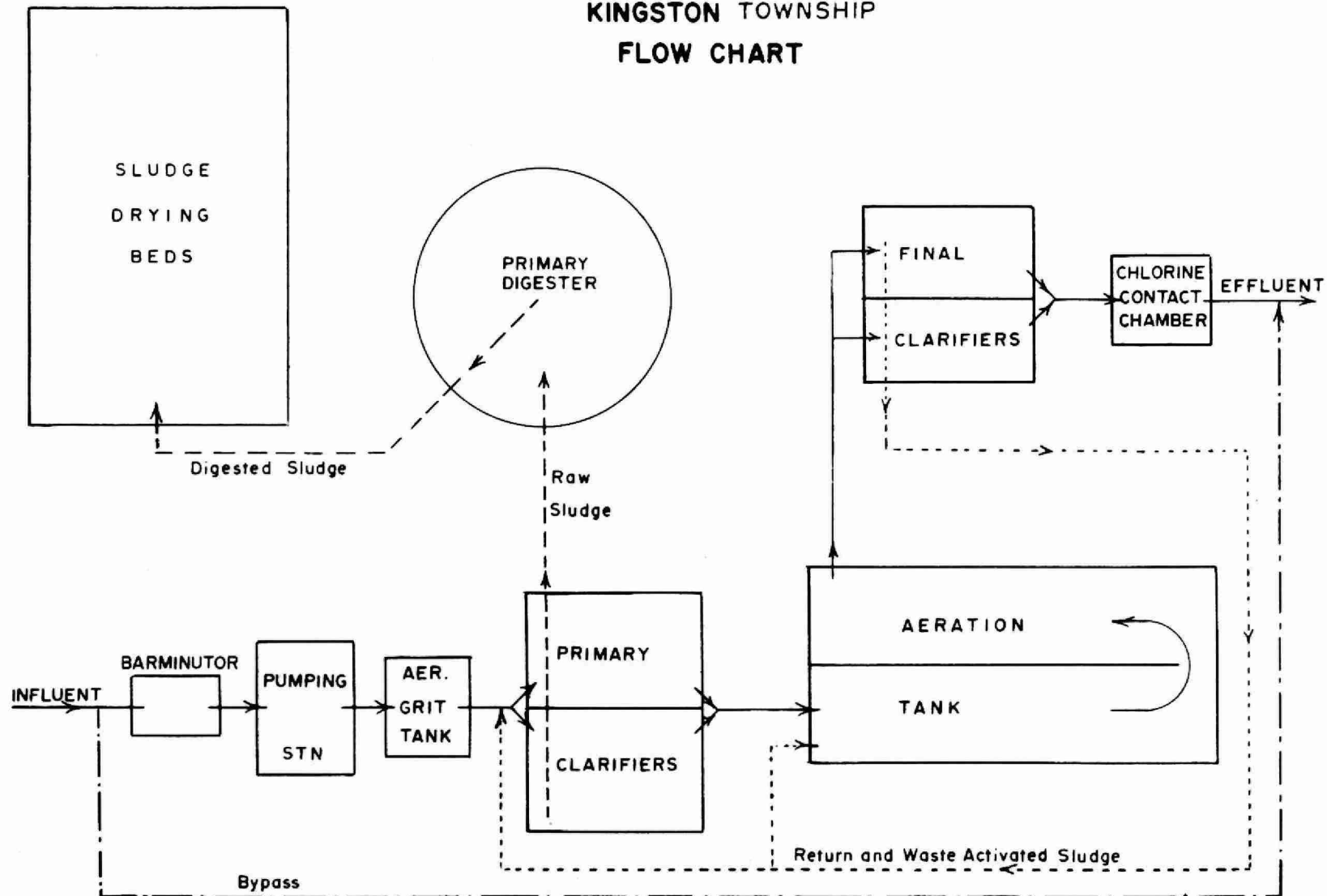
T. Cross, Director

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# KINGSTON TOWNSHIP FLOW CHART



## DESIGN DATA

PROJECT NAME Kingston Twp WPCP

PROJECT NO. 2-0098-61

TREATMENT Activated Sludge

DESIGN FLOW 0.83 mgd

DESIGN POPULATION 10,000

BOD - Raw Sewage 210 mg/l

SS - - Raw Sewage 250 mg/l

### PRIMARY TREATMENT

#### Comminution

Type: C. P. Barminutor  
Size: One Model C (18')

#### Sewage Lift Pumps

Type: Weinman Type VBM  
Size: Two 1200 gpm @ 35' tdh

#### Grit Removal

Type: Aerated; grit removed by air lift  
Size: 1920 gal  
Retention: 2 min

### Primary Sedimentation

Type: Falk  
Size: Two 46' x 12' x 7'7" deep  
(8,380 cu ft or 52,200 gal)  
Retention: 1.5 hours  
Loading: Surface, 750 gal/ft<sup>2</sup>/day  
Weir, 8,600 gal/ft/day

### SECONDARY TREATMENT

#### Aeration Tanks

Type: Diffused air; Two-pass  
Size: One tank 62' x 22.5' x 15'  
(each pass) (41,900 cu ft  
or 262,000 gal)  
Retention: 7.6 hours

#### Air Supply

Type: Roots-Connersville  
Size: Two 880 scfm

#### Diffusers

Type: C. P. Discfuser  
Space: 63 diffusers per pass  
(wide band)

### Secondary Sedimentation

Type: Falk  
Size: Two 56' x 12' x 9' deep  
(12,100 cu ft or 75,600 gal)  
Retention: 2.2 hours  
Loading: Surface, 562 gal/ft<sup>2</sup>/day  
Weir, 5,050 gal/ft/day

### CHLORINATION

One W & T (100 lb/day)

#### Chlorine Contact Chamber

Size: One 27' 9" x 9' x 8' deep  
(10,300 gal)  
Retention: 18 min

### OUTFALL

3,000 ft to Lake Ontario

### SLUDGE HANDLING

#### Digestion System

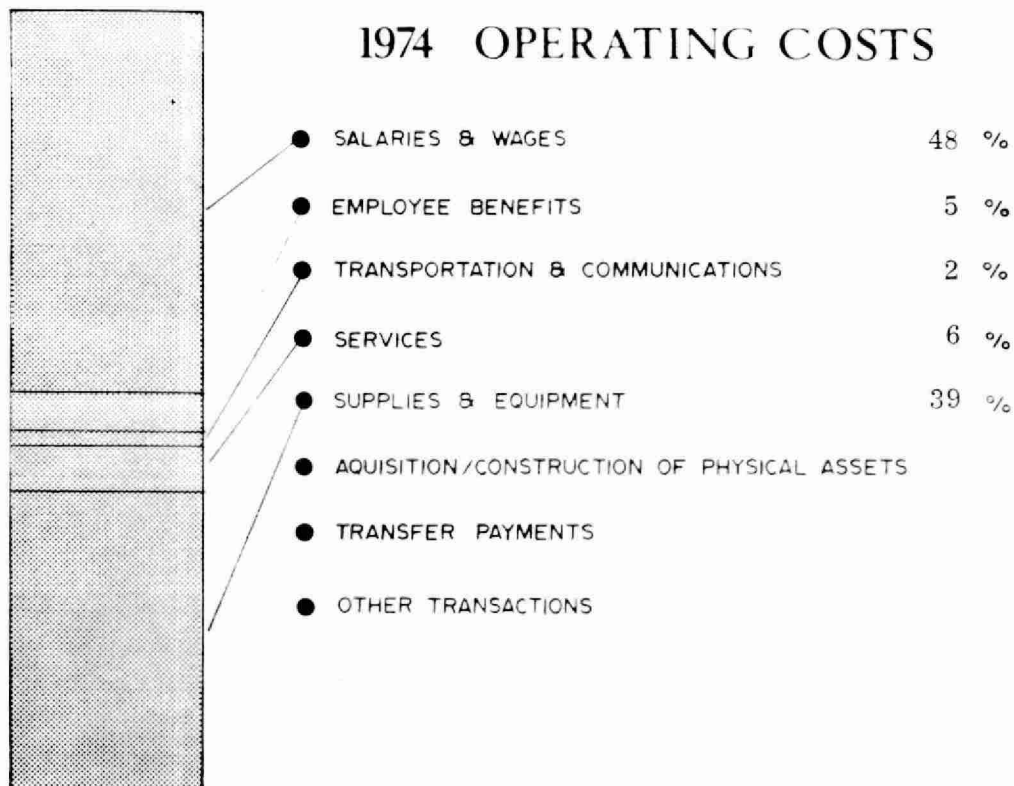
Type: Single stage, mixed by sludge recirculation  
Size: One 55' dia x 20' swd  
(54,500 cu ft or 340,000 gal)  
Loading: 0.57 lb/cu ft/mo  
Recirculation pump - one Weinman:  
150 gpm @ 65'

#### Sludge Drying Beds

Four 80' x 20' (6,400 sq ft)

# ANNUAL COSTS

## 1974 OPERATING COSTS



## YEARLY OPERATING COSTS

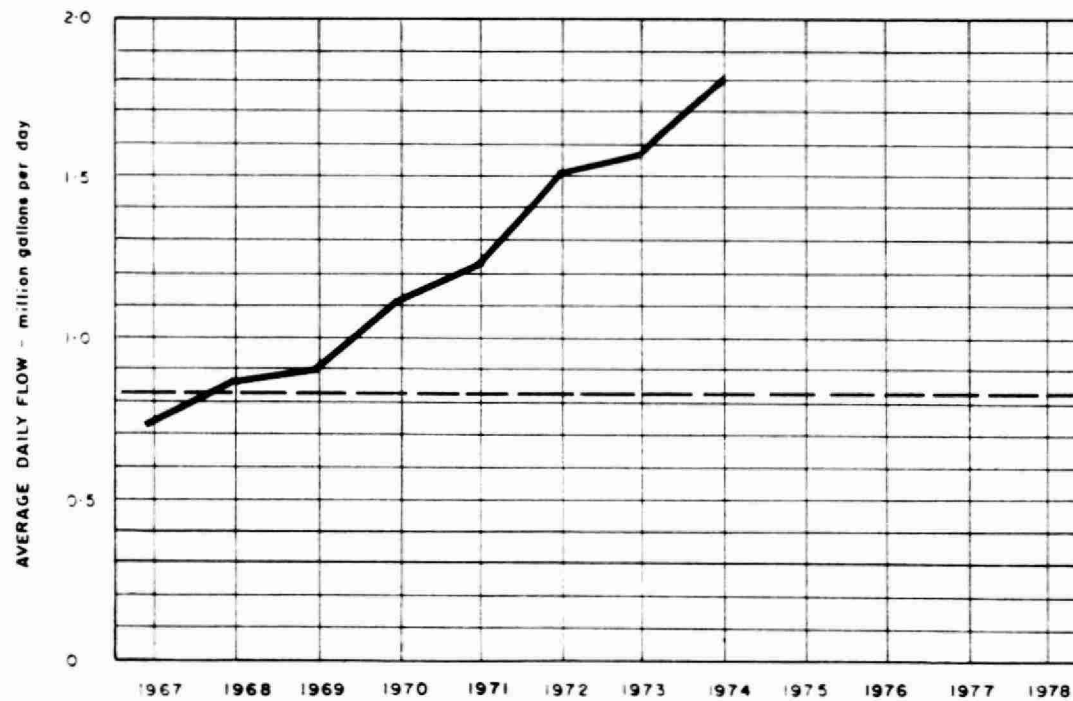
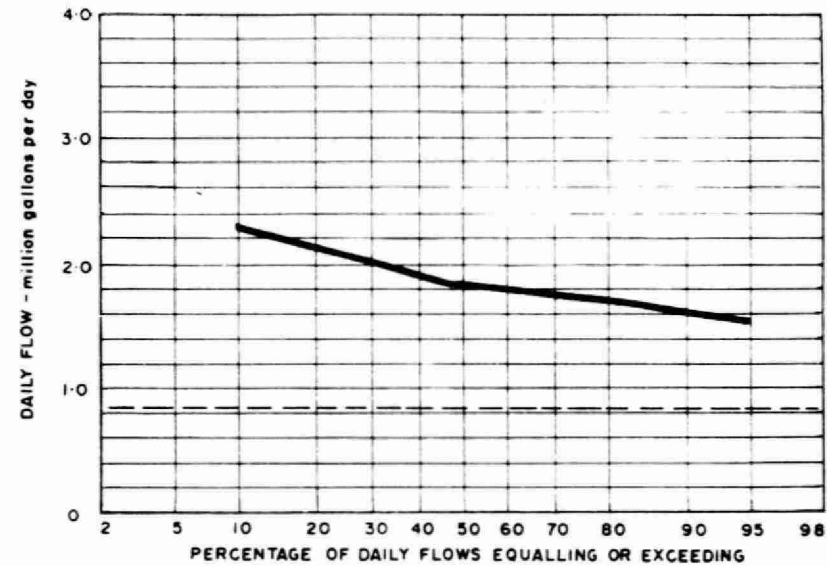
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G	¢/lb BOD
1969	345	39,254	114	3
1970	408	44,857	110	7
1971	454	51,491	113	8
1972	549	64,452	117	5
1973	569	60,020	105	2
1974	672	75,876	113	6



# OPERATING EXPENDITURES

Regular Staff	\$ 34,814	\$
Casual (Unclassified) Staff	1,491	
TOTAL SALARIES AND WAGES		36,305
TOTAL EMPLOYEE BENEFITS		3,560
TOTAL TRANSPORTATION AND COMMUNICATIONS		1,825
Insurance	1,500	
Sludge Haulage	322	
Repairs and Maintenance	2,895	
Other Services	171	
TOTAL SERVICES		4,888
Machinery and Equipment	4,970	
Chemicals	5,731	
Utilities	16,091	
Other Supplies and Equipment	2,506	
TOTAL SUPPLIES AND EQUIPMENT		29,298
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	\$ 75,876

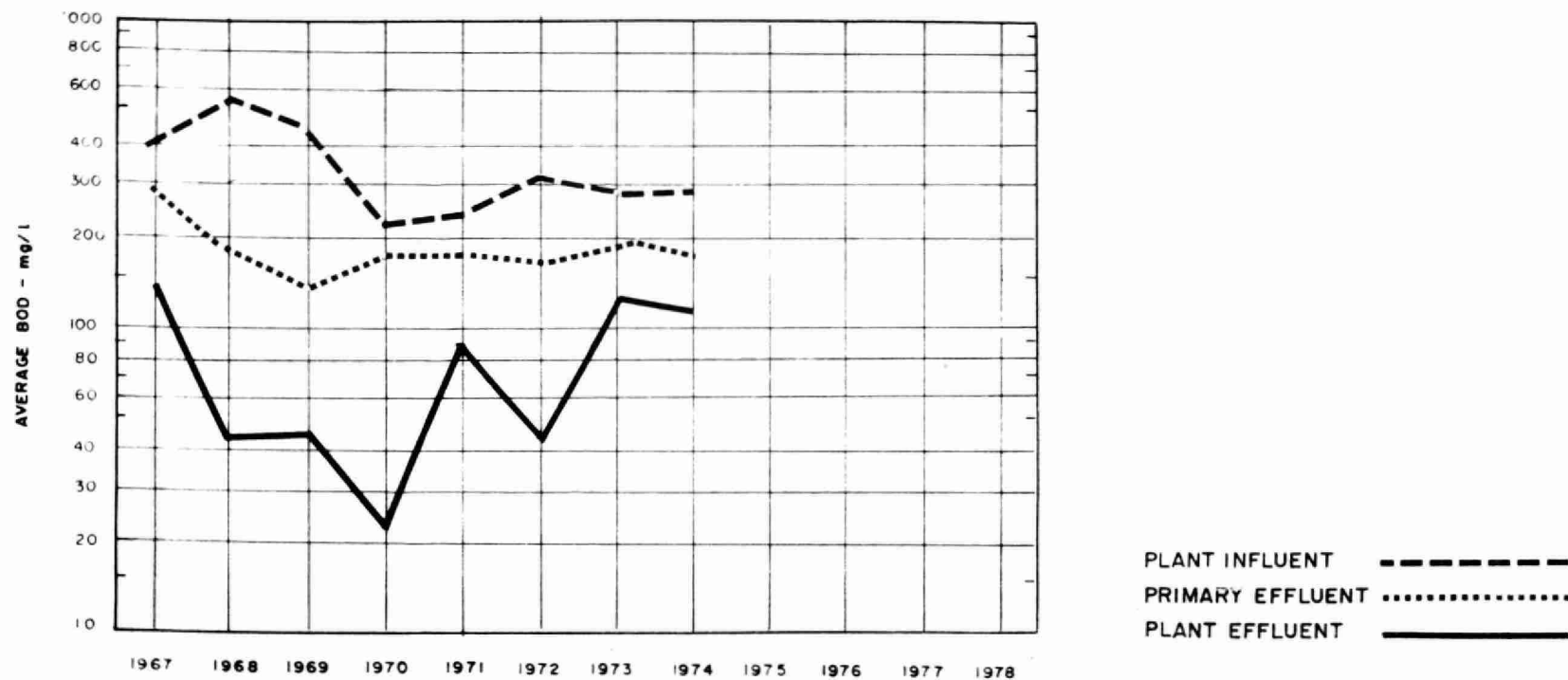
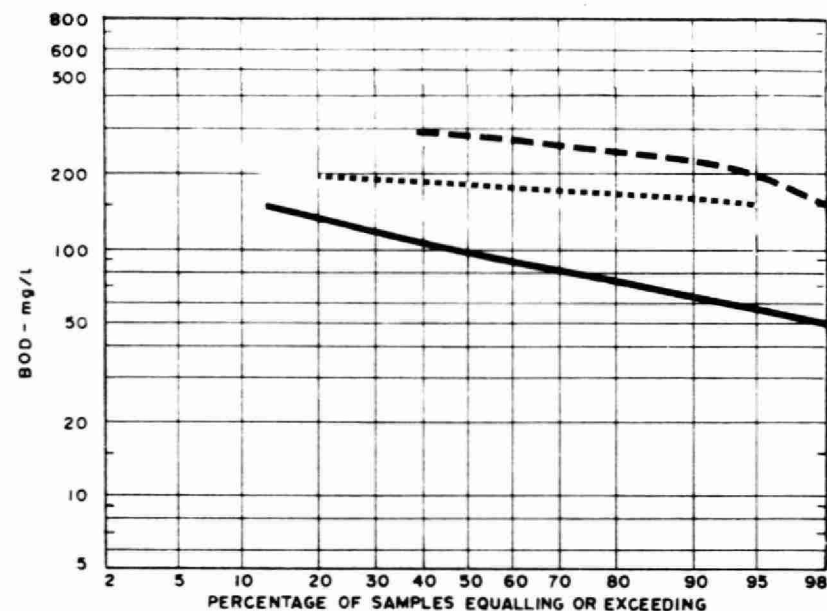
# PROCESS DATA FLOWS



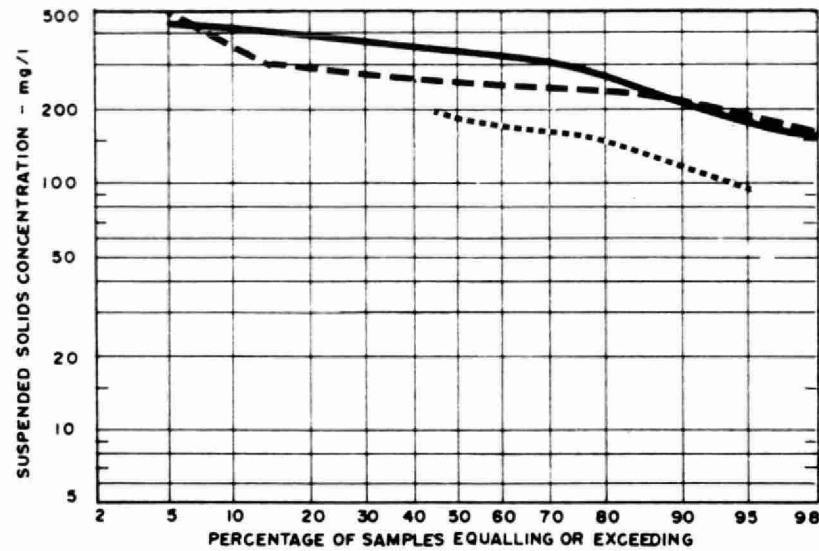
## PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l P	mg/l P
JAN	56.48	1.82	2.40	316	120	62	111	247	101	59	82	4.2	3.2
FEB	45.89	1.64	2.28	321	105	67	99	253	84	67	78		
MAR	55.43	1.79	2.36	257	80	69	98	219	73	67	81	4.9	3.1
APR	59.31	1.98	2.40	255	106	58	88	255	83	67	102	5.2	3.0
MAY	55.90	1.80	2.36	110	70	36	22	70	60	14	6	3.2	2.0
JUNE	55.12	1.84	2.12	265	114	57	83	247	109	56	76	3.6	5.5
JULY	52.24	1.69	1.89	276	96	65	94	275	85	69	99	9.0	5.8
AUG	51.04	1.65	1.89	284	90	68	99	300	86	71	109		
SEPT	55.06	1.84	2.17	279	102	63	97	355	103	71	139	4.2	6.8
OCT	61.38	1.98	2.23	275	139	49	83	294	115	61	110	7.9	5.0
NOV	62.91	2.10	2.41	224	85	62	87	253	72	72	114	3.9	2.2
DEC	61.79	1.99	2.38	255	99	61	96	270	95	65	108		
TOTAL	672.55	-	-	-	-	-	1184	-	-	-	1197	-	-
AVG.		1.84	MAXIMUM 2.41	288	112	61	99	271	93	66	100	5.6	4.2
No. of Samples	-	-	-	49	49	-	-	52	52	-	-	11	11

# BIOCHEMICAL OXYGEN DEMAND



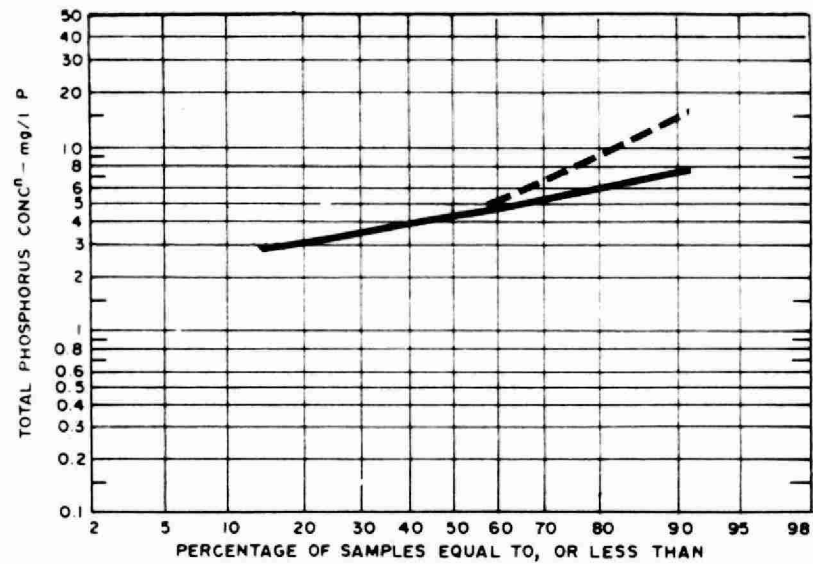
# SUSPENDED SOLIDS



PLANT INFLUENT      - - - - -  
 PRIMARY EFFLUENT    . . . . .  
 PLANT EFFLUENT      \_\_\_\_\_



# PHOSPHORUS

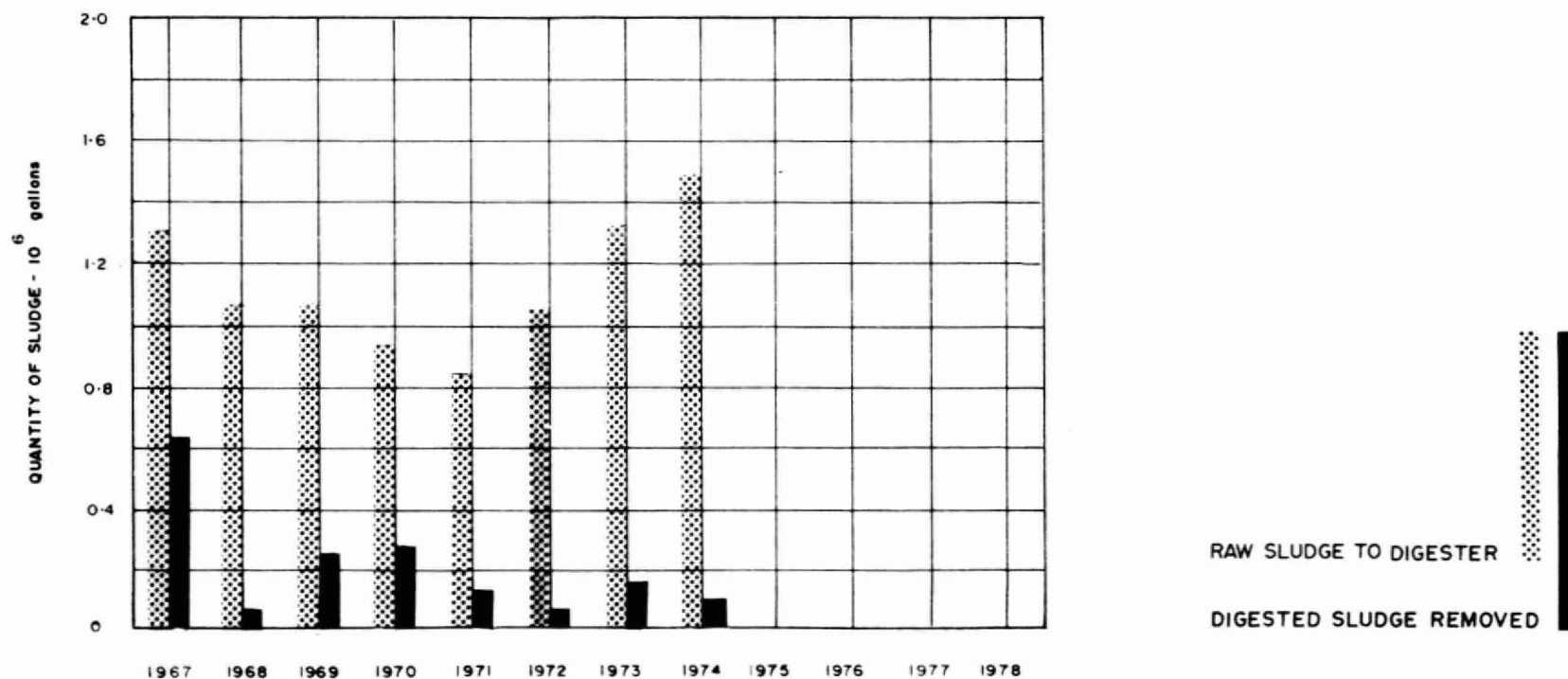
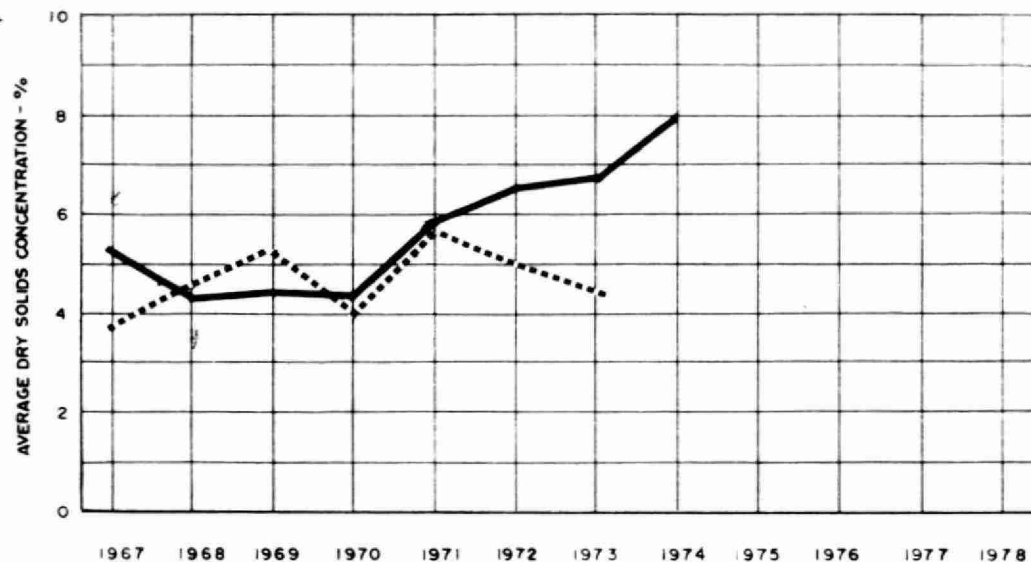


PLANT INFLUENT      - - - - -

PLANT EFFLUENT      —————

# DIGESTION

RAW SLUDGE .....  
DIGESTED SLUDGE —



## TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL <sub>2</sub> USED 10 <sup>3</sup> pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day <sup>-1</sup>	AIR 1000 ft <sup>3</sup> lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	50	2.3	4.2	211	183	2000	.22	.8	134			10	8.0		.07	
FEB	55	1.8	4.2	212	168	1600	.27	.9	111			10			.04	
MAR		1.9	3.5	171	177	2200	.16	.8	133						.08	
APR	60	1.2	2.2	178	190	2300	.17	1.0	126			10			.08	
MAY	30	1.8	3.3	118	70	1800	.25	.7	121			6			.20	
JUNE	25	1.2	2.9	184	162	900	.78	.4	118			18			.03	
JULY	30	1.7	3.2	186	179	2100	.19	.8	123			10				
AUG		1.8	3.6	165	218	1800	.21	1.2	134			20			.10	
SEPT	30	1.5	2.7	167	186	1500	.44	.5	102						.20	
OCT	30	1.3	2.7	177	175	2500	.30	.5	135							
NOV	30	.9	1.4	100	75	1500	.30		127			10				
DEC	55	1.3	2.2			1800			123							
TOTAL	395	18.7	-	-	-	-	-	-	1487	-	-	94	-	-	-	
AVG.	.6 cu. ft/mil gal	1.6	2.8	181	177	1800	.30	.8	123			12	8.0		.10	



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